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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,341	08/05/2003	Kenichi Nara	4041J-000751	6753
27572	7590	06/03/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			MCKINNON, TERRELL L	
P.O. BOX 828			ART UNIT	PAPER NUMBER
BLOOMFIELD HILLS, MI 48303			3743	

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/634,341	NARA ET AL.
	Examiner Terrell L. McKinnon	Art Unit 3743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

#### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 21 February 2005.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-69 is/are pending in the application.
- 4a) Of the above claim(s) 1-42 and 54-69 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 43-53 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 05 August 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>8/5/2003</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

**DETAILED ACTION**

Applicant's election without traverse of Species principally illustrated in Figures 29 and 30 and claims 43-53, which read on the elected species in filed February 21, 2005 is acknowledged.

Claim 1-42 and 54-69 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b) as being drawn to a non-elected invention.

Election was made without traverse filed February 21, 2005.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 45, 46 and 51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 45, 46 and 51 as written are classified as a product by process claim.

Sections 2113 MPEP, Product by Process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 43-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishio et al. (U.S. 6,655,450) in view of Chrysler et al. (U.S. 4,765,397).

Nishio discloses a forced oscillatory flow type heat pipe comprising:

- a plurality of flow paths for a fluid to flow therethrough;
- a tube-shaped aluminum member defining a plurality of through-holes formed parallel to each other, the through-holes constituting at least part of the flow paths;
- a flow of the fluid is an oscillating flow with a predetermined cycle and predetermined amplitude.

Nishio's invention discloses all of the claimed limitations from above except for a microchannel formed in the flow paths in a vicinity of a heat source, the flow paths being smaller in size relative to other portions; the microchannel is formed of any one of at least one tubular member and at least one rod-like member disposed in the flow paths in the vicinity of the heat source; the microchannel is formed of a metal defining a cavity which is in communication from one end to the other end in a flow direction of the fluid, the metal being disposed in the flow paths in the vicinity of the heat source.

However, Chrysler teaches a microchannel formed in the flow paths in a vicinity of a heat source, the flow paths being smaller in size relative to other portions (Fig. 5); the microchannel is formed of any one of at least one tubular member and at least one rod-like member disposed in the flow paths in the vicinity of the heat source; the

microchannel is formed of a metal defining a cavity which is in communication from one end to the other end in a flow direction of the fluid, the metal being disposed in the flow paths in the vicinity of the heat source (column 5, lines 32-55 and column 6, lines 60-68).

Given the teachings of Chrysler, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the forced oscillatory flow type heat pipe of Nishio with a microchannel formed in the flow paths in a vicinity of a heat source, the flow paths being smaller in size relative to other portions; the microchannel is formed of any one of at least one tubular member and at least one rod-like member disposed in the flow paths in the vicinity of the heat source; the microchannel is formed of a metal defining a cavity which is in communication from one end to the other end in a flow direction of the fluid, the metal being disposed in the flow paths in the vicinity of the heat source.

Doing so would provide enhance heat transfer and improve the efficiency of the heat transport system.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references cited on the USPTO 892 discloses related limitations of the applicant's claimed and disclosed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terrell L. Mckinnon whose telephone number is 571-

272-4797. The examiner can normally be reached on Monday -Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on 571-272-4791. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Terrell L Mckinnon  
Primary Examiner  
Art Unit 3743  
May 31, 2005